NAME: DATE:

p1020: graded take-home open-note practice exam (version 216)

Question 1

Let f represent a function. If $f[22] = 46$, then there exists a knowable solution to the equation below.

$$y = 7 \cdot \left(f\left[\frac{x}{2} - 3 \right] - 41 \right)$$

Find the solution.

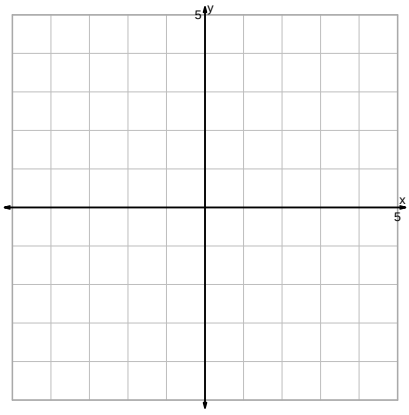
$x =$

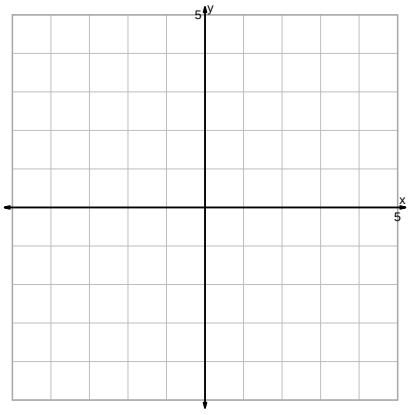
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

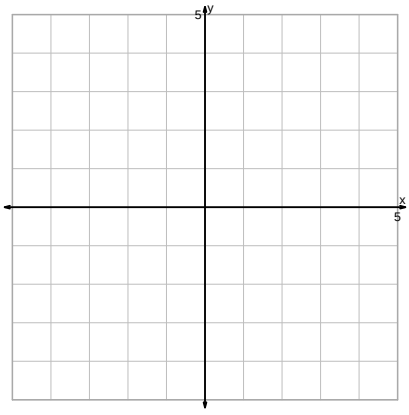
$y = \frac{2^x}{2}$

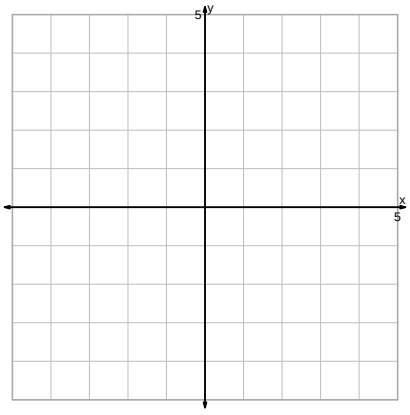




$y = 2 \cdot \sqrt[3]{x}$

$y = (x+2)^2$

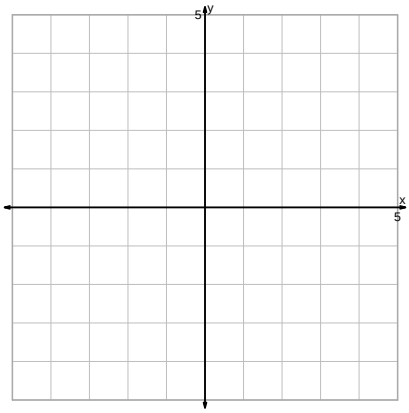


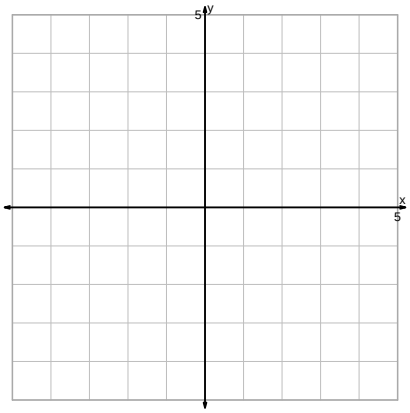


$y = \sqrt[3]{\frac{x}{2}}$

Question 2 continued...

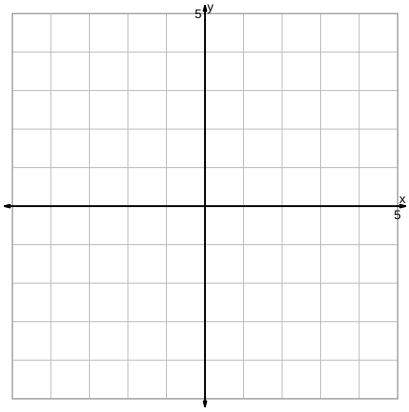
$y = \sqrt{-x}$

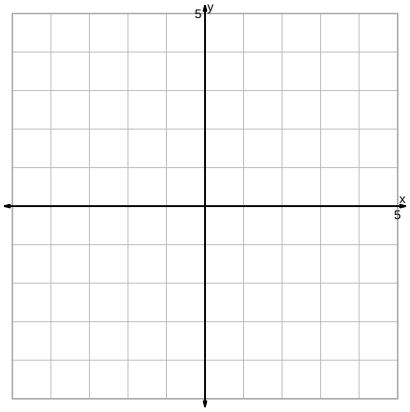




$y = \log_2(x) - 2$

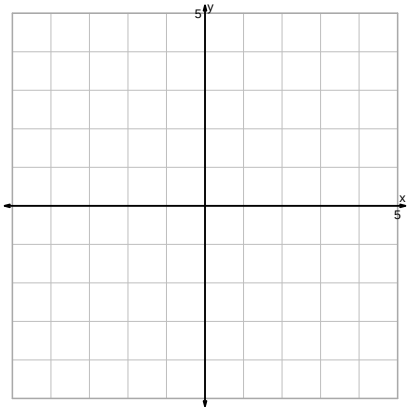
$y = (x-2)^3$

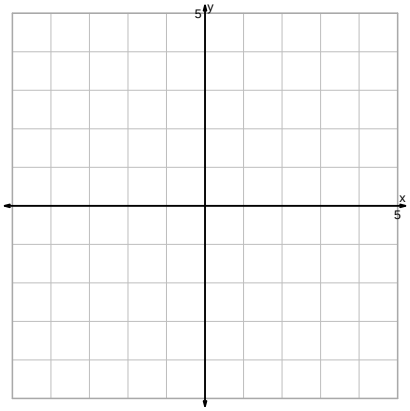




$y = -2^x$

$y = (2x)^2$

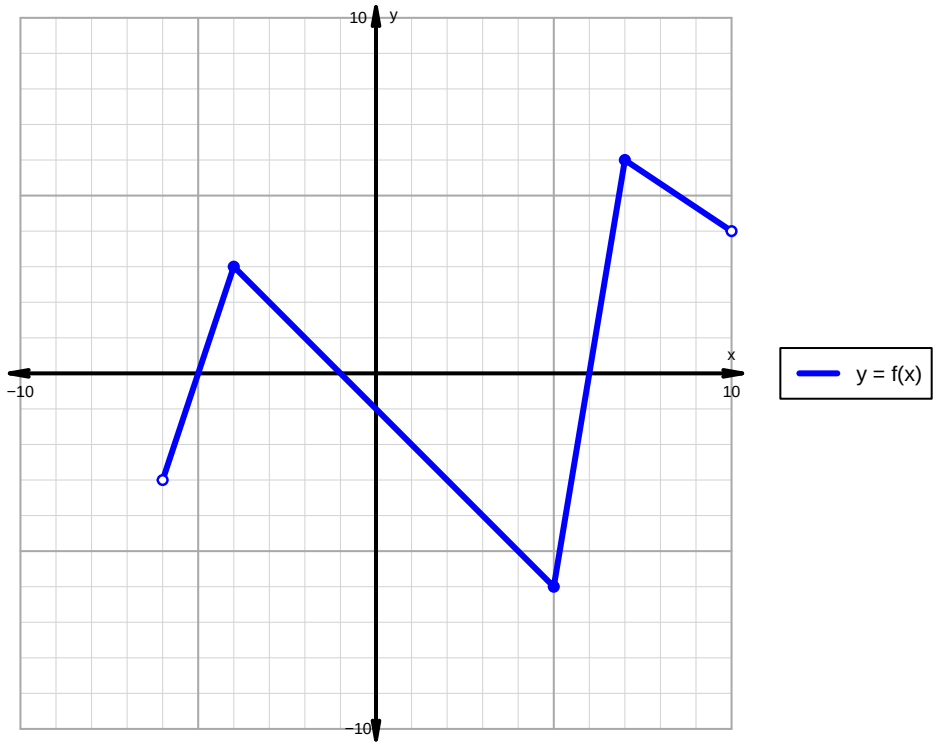




$y = \sqrt{x} + 2$

Question 3

A function is graphed below.



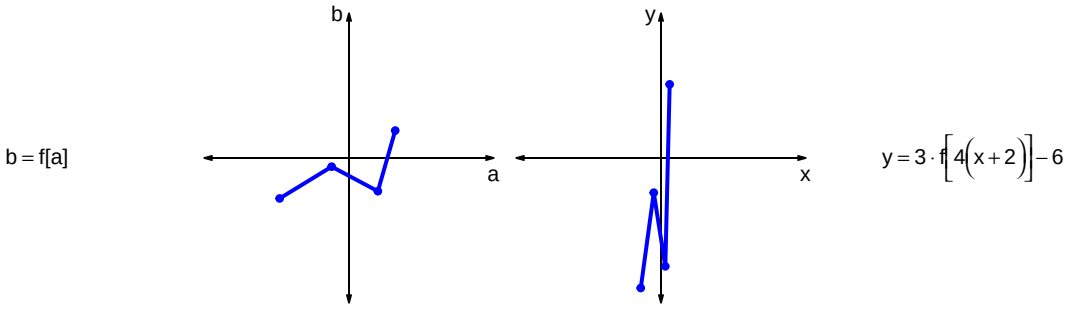
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 3 \cdot f[4\,(x+2)] - 6$ are represented below in a table and on graphs.

a	b	x	y
-48	-28	-14	-90
-12	-6	-5	-24
20	-23	3	-75
32	19	6	51



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 3 \cdot f[4\,(x+2)] - 6$?

Question 5

A parent square-root function is transformed in the following ways:

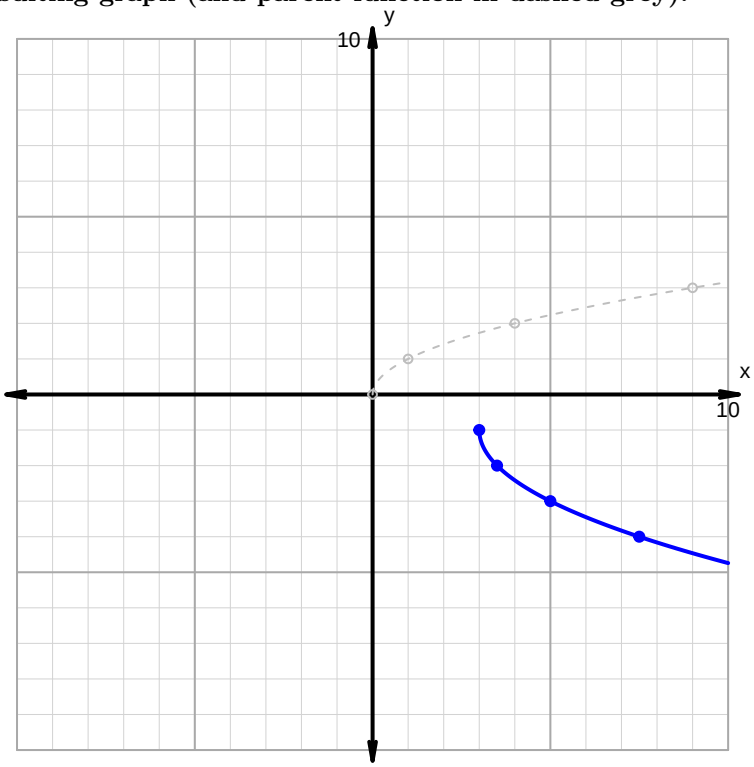
Horizontal transformations

1. Horizontal shrink by factor 2.
2. Translate right by distance 3.

Vertical transformations

1. Translate up by distance 1.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):

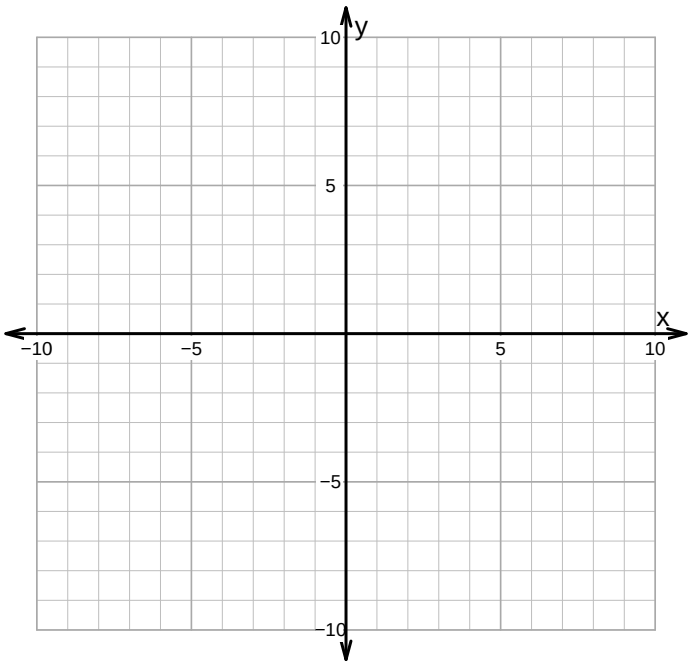


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y \;=\; -2 \cdot |x + 7| + 4$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	